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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Ziya Aral

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EXAMINER

TRAN, NGHI V

ART UNIT

PAPER NUMBER

2151

DATE MAILED: 08/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/910,662	ARAL ET AL.	
	Examiner	Art Unit	
	Nghi V. Tran	2151	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 May 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 and 18-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 18-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

1. This office action is in response to the amendment filed on May 22, 2006.

Claims 1-3 and 5-6 have been amended. Claims 12-17 have been canceled.

Therefore, claims 1-11 and 18-26 are presented for further examination.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6, 9-11, 18-21, 23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanai et al., U.S. Patent No 6,502,205 (hereinafter Yanai), in view of McDowell, U.S. Patent No. 6,260,125 (hereinafter McDowell).

4. With respect to claims 1, 3, and 5, Srinivasan teaches a system for mirroring write operations [i.e. a remote mirroring facility **30** which transmits the write commands, col.5, Ins.17-36] from a local storage system [i.e. primary host processor **21**] onto a remote storage system [i.e. secondary host processor **24**], the system comprising:

- an asynchronous mirroring driver [i.e. the remote data mirroring facility **30** can be operated in an asynchronous mode, col.13, Ins.40-65] resident in the local

storage system for intercepting I/O transactions [i.e. a remote mirroring facility **30** which transmits the write commands, col.5, lns.17-36] to a storage disk of the local storage system [i.e. primary data storage system **20**] [fig.1], identifying a series of write transactions issued to said storage disk [col.1, lns.18-43 and col.3, ln.58 – col.4, ln.17], making an exact copy of the series of write transactions [i.e. maintains a copy of the dataset], and storing said exact copy within a series of files [i.e. dataset] that are created on a file-system of the local storage system [i.e. the primary data storage system **20** stores a dataset **41** in primary storage, col.5, ln.36 – col.6, ln.50]; and

a first asynchronous mirroring coordinator [i.e. a remote mirroring facility **124**] resident on the local storage system [i.e. primary host processor **112**] for invoking a file transfer system to transmit the series of files on local file-system of the local storage system [i.e. primary storage **118**] to a file system of the remote storage system [i.e. secondary storage **128**] via a non-proprietary network protocol [i.e. a transmission link] to accommodate an exact reproduction at the remote storage system of the series of write transactions as issued to said storage disk of the local storage system [fig.8].

5. With respect to claims 2,4 and 6, Srinivasan further teaches the system claim 1 further comprising:

- a second asynchronous mirroring coordinator [i.e. remote mirroring facility **134**] resident on the remote storage system for detecting the series of files on the file system of the remote storage system, opening the files and reading

the copies of the series of write transactions in these files [fig.8 and col.14, ln.46 – col.15, ln.14]; and

- an asynchronous mirroring driver resident on the remote storage system for receiving the copies of the series of write transactions from the second asynchronous mirroring coordinator and issuing the transactions to a remote device connected to the remote storage system which is configured to mirror the local storage device on the local storage system [col.10, lns.30-57].

6. With respect to claims 9-11, Srinivasan further teaches the asynchronous mirroring driver intercepts all I/O transactions in the system [i.e. the remote data mirroring facility can be operated in an asynchronous mode, col.13, lns.40-65].

7. With respect to claims 18-20, Srinivasan further teaches the asynchronous mirroring driver intercepts a transaction affecting the content or organization of a disk [col.20, ln.41 - col.21, ln.38].

8. With respect to claims 21, 23, and 25, Srinivasan further teaches the series of write transactions is one of the plurality of series of I/O transactions that are respectively retained in corresponding ones of the series of files [col.1, lns.18-43 and col.3, ln.58 – col.4, ln.17], and individual ones of the series of files include pointers to accommodate sequencing the series of files [i.e. sequence number, col.13, lns.40-65], whereby a

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transaction level record of changes to the storage disk of the local storage system is provided for the remote storage system [fig.10].

9. With respect to claims 22, 24, and 26, Yanai further teaches the plurality of series of I/O transactions include at least one formatting transactions [i.e. each transaction includes a set of read-write instructions] and/or at least one partitioning transaction [col.1, lns.18-43 and col.3, ln.58 – col.4, ln.17].

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Srinivasan as applied to claims 1, 3, and 5 above, in view of Cannon et al., U.S. Patent No. 5,673,382 (hereinafter Cannon).

11. With respect to claim 7, Srinivasan does not explicitly show a Header portion that includes information on the total size of the file; an I/O Control Block portion which indicates address offsets where each transaction in the file is to be stored on the remotely located destination storage system, and which further indicates the size of the data for each transaction; and a Data portion which contains the data for each transaction in the file.

In a communication system, Cannon discloses individual ones of the series of the files comprise:

- a Header portion that includes information on the total size of the file [col.8, lns.44-46];

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- an I/O Control Block portion which indicates address offsets where each transaction in the file is to be stored on the remotely located destination storage system, and which further indicates the size of the data for each transaction [col.8, Ins.43-44]; and
- a Data portion which contains the data for each transaction in the file [col.8, Ins.41-46].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify both Srinivasan in view of Cannon by including a Header portion on the total size, indicating an I/O Control Block portion, and containing a Data portion for each transaction in the file because this feature keeps track of each transaction (i.e. the size of the file, the size of data for each transaction and the data portion). It is for this reason that one of ordinary skill in the art at the time of the invention would have been motivated to modify in order to provide disaster recovery [Cannon, see abstract].

12. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Srinivasan in view of Cannon as applied to claim 7 above, and further in view of Durflinger et al., U.S. Patent No. 5,713,014 (hereinafter Durflinger).

13. With respect to claim 8, Srinivasan in view of Cannon does not explicitly show a pointer to the I/O Control Block portion which indicates the offset where the I/O Control

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Block portion of the file begins; and a pointer to the Data portion, which indicates the offset where the Data portion of the file begins.

In a communication system, Durflinger discloses the Header portion further includes: a pointer to the I/O Control Block portion which indicates the offset where the I/O Control Block portion of the file begins; and a pointer to the Data portion, which indicates the offset where the Data portion of the file begins [col.11, Ins.13-37].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Srinivasan in view of Cannon, and further in view of Durflinger by indicating the I/O Control Block and Data portion of the file begins because this feature indicate where the I/O control block portion begins in the file and where the data begins in the file. It is for this reason that one of ordinary skill in the art at the time of the invention would have been motivated to modify both Yanai and Cannon, and further in view of Durflinger in order to access the files easier.

### ***Response to Arguments***

14. Applicant's arguments with respect to claims 1-11 and 18-26 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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- a. "Method and apparatus for mirroring data in a remote data storage system," by Ofek, U.S. Patent Application Publication No. 2002/0199058.
- b. "Resource allocation throttle for remote data mirroring system," by Wahl et al., U.S. Patent No. 6,442,706.

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nghi V. Tran whose telephone number is (571) 272-4067. The examiner can normally be reached on Monday-Friday.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zarni Maung can be reached on (571) 272-3939. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nghi V Tran  
Patent Examiner  
Art Unit 2151

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